

TREND STUDY 1-14-96

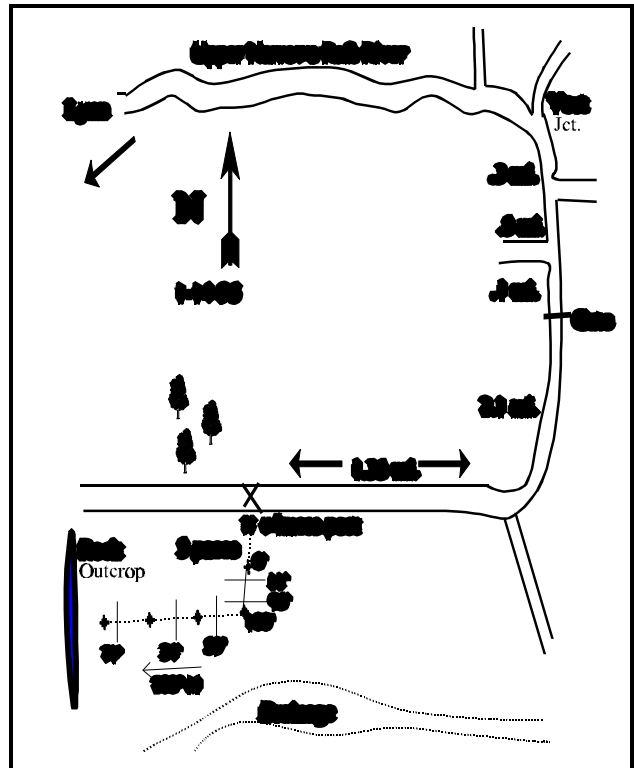
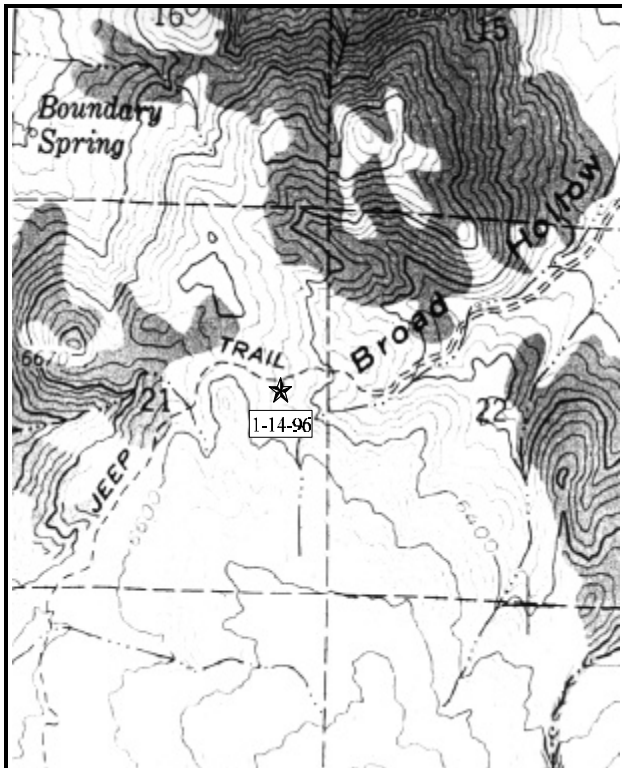
Study site name: Broad Hollow. Range type: Mixed mountain brush.

Compass bearing: frequency baseline 160 degrees magnetic.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) Line 1 (11 & 95ft), line 2 (59ft), line 3 (34ft), line 4 (71ft).

LOCATION DESCRIPTION

From the junction of U-30 and the Morris Ranch Road, proceed 29.2 miles to Yost junction, passing through Lynn and crossing the Raft River. Turn right and proceed past the creek and the cattle guard for 0.30 miles. Turn right and travel 0.45 miles and take the left fork (right fork leads to a bridge). Proceed 0.10 miles and pass through the gate, continue 1.1 miles to the Forest Service fence and sign. Continue 0.9 miles, turn right and proceed 1.35 miles to a witness post on left (road is steep, winding and rough). From the rockpile, walk five paces at a bearing of 152 degrees true, to the 0-foot stake of the baseline marked by browse tag #7916. Bearing of the baseline is 160 degrees magnetic. From the 100 foot baseline stake, the baseline doglegs and runs 208 degrees magnetic.



Map Name: Yost, Utah

Diagrammatic Sketch

Township 14N, Range 16W, Section 21, UTM: 2-77-348E 46-45-185N

DISCUSSION

Trend Study No. 1-14

This study is located on a higher elevation (6,500 feet) normal or preferred winter range in upper Broad Hollow. Slope is 20% and faces southeast. Judging from browse utilization and pellet group frequency, deer use is relatively intense, although depending on weather conditions, sometimes less than at the nearby Raft river Narrows location. The area is currently occupied by mixed mountain brush, however, evidence of a fire before study establishment in 1984, suggests the area once had a dispersed stand of Utah juniper.

Soil is relatively deep (effective rooting depth of almost 16 inches, (see methods), sandy loam-textured, and in places it is quite rocky on the surface. Vegetative, litter cover, and soil organic content are adequate except in some of the larger shrub interspaces where bare soil can be found. Soil erosion does not currently appear to be a serious problem.

As is typical of mountain brush types, browse composition consists of several preferred forage species. The key browse species are antelope bitterbrush, serviceberry, and mountain big sagebrush. Together, these species comprise 46% of the estimated browse cover. Serviceberry occurs in relatively small numbers. The average mature plant measures approximately 3½ to 4 feet in height. Utilization was extremely heavy in 1990, but current use is moderate. Bitterbrush currently have an estimated density of 900 plants/acre, 87% of which are mature. Utilization is moderately heavy with heavy use ranging from 30% in 1990 to 24% in 1996. Decadence is low and vigor is good. Mountain big sagebrush is the most numerous preferred species. It accounts for 28% of the shrub. Density was estimated at 1,465 plants/acre in 1984, increasing to 2,880 by 1996. Sagebrush use was highly variable in 1990, with some plants displaying heavy use while others show little use, indicating hybridization with other less palatable sagebrush species. Overall, use is light to moderate. Decadency was low at 4% in both 1984 and 1996, and 19% in 1990. All plants display normal vigor.

The most numerous browse on the site is the strong increaser, stickyleaf low rabbitbrush. It accounts for 19% of the browse cover. These shrubs show mostly light use. The population has declined in density from 7,066 plants/acre in 1984 to 4,700 by 1996.

The herbaceous understory has a diverse composition and provides substantial ground cover. Unfortunately, annual cheatgrass is the dominate species, accounting for 65% of the grass cover. Perennial grasses combine to produce the other 35% of the grass cover. Among perennial grasses, the most prevalent are thickspike wheatgrass and Sandberg bluegrass. Other grasses include Indian ricegrass, bottlebrush squirreltail, bluebunch wheatgrass, needle and thread, and occasional clumps of Great Basin wildrye. Forbs are also productive and include several desirable species. Important forbs include arrowleaf balsamroot, narrowleaf lomatium, yampa, sulfur eriogonum, and tapertip hawksbeard. Arrowleaf balsamroot is the dominant forb, comprising 55% of the forb cover. Current utilization of grasses and forbs is light.

1984 APPARENT TREND ASSESSMENT

Soil trend is stable or even improving. The rate of erosion is slow and further site stabilization is likely as shrub density and cover continue to improve. Vegetatively, secondary or post-fire succession is still in progress. Vegetative cover and density are increasing and are especially noticeable within the shrub component. Two species, mountain snowberry and stickyleaf low rabbitbrush, may eventually gain a measure of dominance on the site. This would be an unfavorable development if deer winter habitat was the only thing being considered.

1990 TREND ASSESSMENT

Trend for soil is down slightly due to a substantial decrease in litter cover and an increase in percent bare ground from 27% to 31%. This is somewhat counteracted by an increase in basal vegetation cover, an increase in cryptogamic cover and a higher sum of nested frequency for grasses. The key browse species, sagebrush, bitterbrush, and serviceberry show evidence of moderate to heavy hedging. Vigor is good, but the populations of these shrubs appear to be slightly decreasing. Snowberry and low rabbitbrush densities have also declined slightly. Trend for browse is considered slightly down. The herbaceous understory has a high species diversity with 6 species of perennial grasses and 15 species of perennial forbs encountered. All of the grasses except squirreltail have increasing sum of nested and quadrat frequencies. Sum of nested frequency of forbs declined slightly, but they only contribute 26% of the herbaceous cover. Overall trend is up slightly.

TREND ASSESSMENT

soil - stable to slightly declining

browse - slightly down

herbaceous understory - slightly up

1996 TREND ASSESSMENT

The soil trend appears up due to a decline in percent bare ground and an increase in litter cover. The browse trend is also up with increased densities of the key browse species, serviceberry, mountain big sagebrush, and antelope bitterbrush. Utilization is lighter than that observed in 1990 and percent decadency is lower. Trend for the herbaceous understory is slightly down for perennial grasses, but up for forbs. Annual cheatgrass continues to dominate the site and sum of nested frequency of the most common perennial grass declined significantly. Overall, trend is considered stable.

TREND ASSESSMENT

soil - up

browse - up

herbaceous understory - stable

HERBACEOUS TRENDS --

Herd unit 01 , Study no: 14

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover % '96
		'84	'90	'96	'84	'90	'96	
G	Agropyron dasystachyum	152	135	131	53	54	50	1.80
G	Agropyron spicatum	_a 9	_a -	_b 21	3	-	9	.47
G	Bromus tectorum (a)	-	-	363	-	-	98	12.29
G	Elymus cinereus	3	-	1	1	-	1	.03
G	Oryzopsis hymenoides	1	4	15	1	3	6	.54
G	Poa fendleriana	_a 27	_{ab} 20	_b 2	13	8	1	.00
G	Poa secunda	_a 55	_b 174	_b 150	24	69	56	3.32
G	Sitanion hystrix	4	1	9	2	1	4	.02
G	Stipa comata	_a 26	_a 42	_b 10	13	21	6	.28
G	Vulpia octoflora (a)	-	-	3	-	-	1	.00
Total for Grasses		277	376	705	110	156	232	18.78

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover % '96
		'84	'90	'96	'84	'90	'96	
F	Agoseris glauca	a39	b12	a52	17	6	22	.11
F	Alyssum spp. (a)	-	-	10	-	-	4	.02
F	Arabis spp.	a3	a4	b27	2	3	11	.08
F	Astragalus beckwithii	5	3	3	2	1	3	.18
F	Astragalus utahensis	-	2	-	-	1	-	-
F	Balsamorhiza sagittata	a9	a11	b35	4	5	17	3.65
F	Calochortus nuttallii	-	3	-	-	1	-	-
F	Chaenactis douglasii	6	6	4	3	3	2	.01
F	Collomia spp. (a)	-	-	2	-	-	1	.00
F	Comandra pallida	-	-	5	-	-	2	.01
F	Collinsia parviflora (a)	-	-	155	-	-	65	.47
F	Crepis acuminata	54	66	43	25	29	25	.51
F	Cryptantha circumscissa	a-	a-	b30	-	-	13	.06
F	Cryptantha spp.	a-	a-	b25	-	-	12	.08
F	Descurainia pinnata	-	-	4	-	-	2	.01
F	Eriogonum umbellatum	a12	ab7	b1	8	4	1	.03
F	Gayophytum ramosissimum	-	-	1	-	-	1	.00
F	Hackelia patens	a3	b17	b18	1	9	8	1.07
F	Lappula occidentalis (a)	-	-	10	-	-	4	.02
F	Lepidium spp.	-	-	3	-	-	1	.00
F	Lomatium triternatum	3	2	-	1	1	-	-
F	Machaeranthera spp	-	-	3	-	-	1	.03
F	Phlox hoodii	a5	b1	b-	3	1	-	-
F	Phlox longifolia	12	5	7	7	2	3	.01
F	Polygonum douglasii (a)	-	-	5	-	-	3	.01
F	Ranunculus testiculatus (a)	-	-	3	-	-	1	.00
F	Senecio multilobatus	-	3	1	-	1	1	.15
F	Tragopogon dubius	a18	b3	b-	9	1	-	-
Total for Forbs		169	145	447	82	68	203	6.58

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --

Herd unit 01 , Study no: 14

T y p e	Species	Strip Frequency '96	Average Cover % '96
B	Amelanchier utahensis	5	2.00
B	Artemisia tridentata wyomingensis	70	9.48

Type	Species	Strip Frequency '96	Average Cover % '96
B	Chrysothamnus viscidiflorus stenophyllus	78	6.49
B	Eriogonum microthecum	1	.03
B	Leptodactylon pungens	4	.30
B	Opuntia fragilis	53	4.37
B	Purshia tridentata	28	4.19
B	Symphoricarpos oreophilus	35	7.39
Total for Browse		274	34.27

BASIC COVER --

Herd unit 01 , Study no: 14

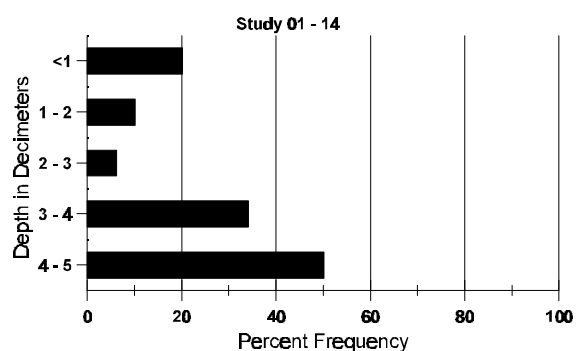
Cover Type	Nested Frequency '96	Average Cover % '84 '90 '96		
Vegetation	377	2.00	13.00	49.77
Rock	85	7.00	6.50	2.10
Pavement	127	1.00	1.00	1.33
Litter	398	62.50	46.25	62.24
Cryptogams	77	1.00	2.50	1.36
Bare Ground	203	26.50	30.75	10.75

SOIL ANALYSIS DATA --

Herd Unit 01, Study no: 14

Effective rooting depth (inches)	Temp °F (depth)	PH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
15.52	59.0 (13)	7.2	63.7	19.0	17.3	1.6	9.1	121.6	.5

Stoniness Index



PELLET GROUP FREQUENCY --
Herd unit 01 , Study no: 14

Type	Quadrat Frequency '96
Rabbit	17
Deer	32
Cattle	3

BROWSE CHARACTERISTICS --
Herd unit 01 , Study no: 14

A G E	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
<i>Amelanchier utahensis</i>																		
M	84	-	2	-	-	-	-	-	-	-	2	-	-	-	133	31	32	2
	90	-	-	1	-	-	-	-	-	-	-	-	1	-	66	33	28	1
	96	1	4	-	-	-	-	-	-	-	5	-	-	-	100	43	62	5
Total Plants/Acre (excluding Dead & Seedlings)															'84	133	Dec:	-
															'90	66		-
															'96	100		-
<i>Artemisia tridentata vaseyana</i>																		
S	84	8	3	-	-	-	-	-	-	-	11	-	-	-	733			11
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
Y	84	5	5	-	-	-	-	-	-	-	10	-	-	-	666			10
	90	3	3	2	1	-	-	-	-	-	9	-	-	-	600			9
	96	27	-	-	-	-	-	-	-	-	27	-	-	-	540			27
M	84	5	5	1	-	-	-	-	-	-	11	-	-	-	733	14	19	11
	90	3	3	1	-	-	-	-	-	-	7	-	-	-	466	16	17	7
	96	94	12	-	2	2	-	-	-	-	110	-	-	-	2200	21	32	110
D	84	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	90	3	1	-	-	-	-	-	-	-	3	1	-	-	266			4
	96	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	220			11
Total Plants/Acre (excluding Dead & Seedlings)															'84	1465	Dec:	5%
															'90	1332		20%
															'96	2880		5%
<i>Chrysothamnus nauseosus</i>																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21	30	0
Total Plants/Acre (excluding Dead & Seedlings)															'84	0	Dec:	-
															'90	0		-
															'96	0		-

A G E	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus viscidiflorus stenophyllus																		
S	84	9	-	-	-	-	-	-	-	-	9	-	-	-	600		9	
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	84	18	-	-	-	-	-	-	-	-	18	-	-	-	1200		18	
	90	6	4	3	3	-	-	-	-	-	16	-	-	-	1066		16	
	96	27	-	-	7	-	-	-	-	-	34	-	-	-	680		34	
M	84	60	13	-	-	-	-	-	-	-	69	-	-	4	4866	17 26	73	
	90	19	8	-	4	-	-	-	-	-	29	-	1	1	2066	16 14	31	
	96	176	1	-	10	5	-	-	-	-	192	-	-	-	3840	16 22	192	
D	84	11	4	-	-	-	-	-	-	-	11	-	-	4	1000		15	
	90	32	3	2	-	-	-	-	-	-	35	-	-	2	2466		37	
	96	5	4	-	-	-	-	-	-	-	9	-	-	-	180		9	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
Total Plants/Acre (excluding Dead & Seedlings)												'84	7066	Dec:	0%			
												'90	5598		0%			
												'96	4700		4%			
Eriogonum microthecum																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5 9	1	
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	-			
												'90	0		-			
												'96	20		-			
Leptodactylon pungens																		
Y	84	3	-	-	-	-	-	-	-	-	3	-	-	-	200		3	
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	84	10	-	-	-	-	-	-	-	-	10	-	-	-	666	10 12	10	
	90	6	-	-	2	-	-	-	-	-	8	-	-	-	533	5 9	8	
	96	7	-	-	-	-	-	-	-	-	7	-	-	-	140	11 13	7	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	1	-	-	-	-	-	-	-	-	-	-	1	-	66		1	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Total Plants/Acre (excluding Dead & Seedlings)												'84	866	Dec:	0%			
												'90	665		10%			
												'96	140		0%			

A G E	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Opuntia fragilis																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	9	-	-	-	-	-	-	-	-	9	-	-	-	600		9	
	96	8	-	-	-	-	-	-	-	-	8	-	-	-	160		8	
M	84	15	-	-	-	-	-	-	-	-	15	-	-	-	1000	3 8	15	
	90	14	-	-	4	-	-	-	-	-	14	-	4	-	1200	4 17	18	
	96	97	-	-	9	-	-	-	-	-	106	-	-	-	2120	4 17	106	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	1	-	-	-	-	-	-	-	-	-	-	1	-	66		1	
	96	11	-	-	1	-	-	-	-	-	7	-	-	5	240		12	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
Total Plants/Acre (excluding Dead & Seedlings)														'84	1000	Dec:	0%	
														'90	1866		4%	
														'96	2520		10%	
Purshia tridentata																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
Y	84	-	4	-	-	-	-	-	-	-	4	-	-	-	266		4	
	90	1	3	-	-	-	-	-	-	-	4	-	-	-	266		4	
	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100		5	
M	84	-	4	4	-	-	-	-	-	-	8	-	-	-	533	20 31	8	
	90	-	2	3	-	-	-	-	-	-	5	-	-	-	333	19 20	5	
	96	14	14	10	1	-	-	-	-	-	39	-	-	-	780	23 43	39	
D	84	-	-	-	3	-	-	-	-	-	2	-	-	1	200		3	
	90	-	1	-	-	-	-	-	-	-	1	-	-	-	66		1	
	96	-	-	1	-	-	-	-	-	-	1	-	-	-	20		1	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
Total Plants/Acre (excluding Dead & Seedlings)														'84	999	Dec:	20%	
														'90	665		10%	
														'96	900		2%	

A G E	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Symphoricarpos oreophilus																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
Y	84	11	-	-	-	-	-	-	-	-	11	-	-	-	733		11	
	90	2	1	1	-	-	-	-	-	-	4	-	-	-	266		4	
	96	12	-	-	-	-	-	-	-	-	12	-	-	-	240		12	
M	84	20	7	-	-	-	-	-	-	-	27	-	-	-	1800	23 23	27	
	90	13	-	-	4	-	-	-	-	-	17	-	-	-	1133	19 29	17	
	96	56	-	-	-	-	-	-	-	-	56	-	-	-	1120	27 47	56	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	6	-	-	-	-	-	-	-	-	5	-	-	1	400		6	
	96	1	2	-	-	-	-	-	-	-	2	-	-	1	60		3	
Total Plants/Acre (excluding Dead & Seedlings)												'84	2533	Dec:	0%			
												'90	1799		22%			
												'96	1420		4%			
Tetradymia canescens																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14 36	0	
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	-			
												'90	0		-			
												'96	0		-			